

REMARKS

Claims 18, 20-28, and 35-40 are currently being considered in the present application after this amendment cancels claim 19, adds claims 35-40, and after claims 29-34 have been withdrawn from consideration pursuant to a restriction requirement of the Examiner. Claims 18 and 20-28 have been amended. The amendments and new claims do not add new matter and find support throughout the specification and figures. Claims 18 and 20-28 stand rejected under 35 U.S.C. § 102(b). It is respectfully submitted that all of the presently pending claims are allowable for at least the following reasons.

I. 35 U.S.C. § 102(b)

Claims 18 and 20-28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by United States Patent No. 5,556,501 to Collins et al. (the Collins reference). Applicants respectfully submit that claims 18 and 20-28 are in condition for allowance, for at least the following reasons.

To reject a claim under 35 U.S.C. § 102, the Office must demonstrate that **each and every claim limitation is identically disclosed** in a single prior art reference. (See Scripps Clinic & Research Foundation v. Genentech, Inc., 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991)). “The identical invention must be shown in as complete detail as is contained in the claim.” M.P.E.P. § 2131. Applicants respectfully submit that the Collins reference does not disclose each and every element of the claimed invention.

Amended independent claim 18 relates to a device for etching a patterned silicon body with a plasma which includes, among other things, a first arrangement for producing a periodical change in the high-frequency power applied to the plasma source. The first arrangement is either a component for controlling the power of the high-frequency generator, in which a digital ramp generator is programmed via a software in the component, or a component for controlling the power of the high-frequency generator, this latter component including an analog ramp generator.

Applicants respectfully submit that the Collins reference does not discuss, or even suggest, either a component for controlling the power of the high-frequency generator, in which a digital ramp generator is programmed via a software in the component, or a component for controlling the power of the high-frequency generator which includes an analog ramp generator. In rejecting claim 19, the features of which are now included in amended claim 18, the Examiner cites a section of the Collins reference that states:

In yet another aspect, an AC power supply and control system capacitively couples AC bias power, typically of the same or similar frequency as the source coil power, to a wafer support cathode, thereby effecting control of the cathode sheath voltage and ion energy, independent of the plasma density control effected by the high frequency power. The system provides bias frequency selected to achieve a number of objectives. First, the upper frequency limit is selected to prevent "current-induced" damage (a too high frequency can cause charge-up damage to sensitive devices.) The lower frequency limit is selected in part to preclude "voltage-induced" damage. Lower frequency bias also yields higher wafer sheath voltages per unit bias power (less heating of substrates) and contributes less to plasma density and thus affords better independent control of ion density and energy. However, a too low bias frequency allows ions to follow the RF component of the wafer sheath electric field, thereby modulating ion energies. The result is a higher peak-to-average energy ratio and wider (double peak) ion energy distribution. Very low bias frequency causes insulator charge-up, inhibiting ion-induced processes during part of the bias frequency period. Conveniently, the preferred frequency ranges for satisfying the above considerations correspond to the source frequency ranges. That is, preferably LF/VHF (low frequency to very high frequency) power within the range 100 kHz to 100 MHz is used. More preferably, LF/HF power within the range 100 kHz to 10 MHz is used. Most preferably, MF (medium frequency) power is used within the range 300 kHz to 3 MHz.

(Collins; col. 4, ll. 25-45; emphasis added). It is respectfully submitted that the cited section of the Collins reference does not disclose, or even suggest, a component for controlling the power of the high-frequency generator, in which a digital ramp generator is programmed via a software in the component, or a component for controlling the power of the high-frequency generator which includes an analog ramp generator. In fact, there is no reference in the Collins reference to a ramp generator of any sort, either digital or analog. Therefore, the Collins reference does not anticipate the subject matter of amended claim 18.

For at least the reasons discussed above, withdrawal of the rejection under 35 U.S.C. §102(b) with respect to claim 18 is hereby respectfully requested.

Claims 20-23 depend from claim 18 and are therefore allowable for at least the same reasons as claim 18 is allowable.

Independent claim 24 relates to a method for anisotropically etching a substrate using a device for etching the substrate with a plasma. The method of claim 24 includes, *inter alia*, causing a plasma source to generate a high-frequency electromagnetic alternating field in which a high-frequency generator is adapted to apply a high-frequency power to the plasma source. The method of claim 24 further includes causing a first

arrangement to produce a periodical change in the high-frequency power applied to the plasma source either by operating a component for controlling the power of the high-frequency generator via a software-programmed digital ramp generator, or by operating a component including an analog ramp generator and for controlling the power of the high-frequency generator. The Collins reference does not disclose, or even suggest, a component for controlling the power of the high-frequency generator having a software-programmed digital ramp generator or an analog ramp generator. As discussed above, the Collins reference does not discuss, or even suggest, any type of ramp generator, nor more specifically, a ramp generator used to control the power of a high-frequency generator. Therefore, claim 24 is not anticipated by the Collins reference.

For at least the reasons discussed above, withdrawal of the rejection under 35 U.S.C. §102(b) with respect to claim 24 is hereby respectfully requested.

Claims 25-28 depend from claim 24 and are therefore allowable for at least the same reasons as claim 24 is allowable.

II. NEW CLAIMS

New claims 35 to 40 are added by this amendment. Claims 35-39 depend from claim 24, and therefore claims 35-39 are allowable for at least the same reasons as claim 24 is allowable, as discussed above. New claim 40 relates to a device for etching a substrate with a plasma. The device includes, *inter alia*, a plasma source adapted to generate a high-frequency electromagnetic alternating field and a first arrangement adapted to produce a periodical change in the high-frequency power applied to the plasma source. The first arrangement is a component for controlling the power of the high-frequency generator. The component includes one of a digital ramp generator programmed via a software, and an analog ramp generator. As discussed above with respect to claim 18, this feature is not disclosed, or even suggested, by the Collins reference. Therefore, new claim 40 is allowable over the cited references.

CONCLUSION

Applicants respectfully submit that all of the pending claims of the present application are now in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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